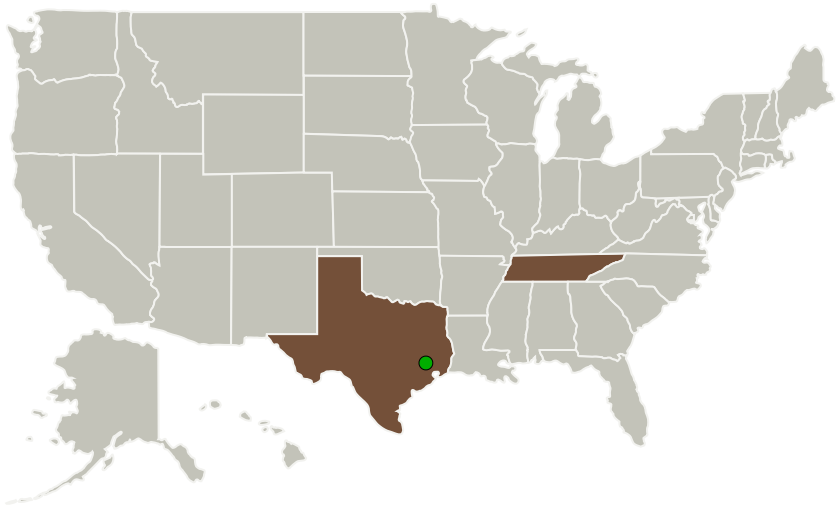
Light Weight Spherical Cryotank, Phase II

Completed Technology Project (2016 - 2018)

Project Introduction

BHL? technology offers the means to reduce the mass of cryogenic propellant tanks by 75% relative to state-of-the-art metal tanks. Since propellant tanks are generally the largest individual mass item on a launch vehicle or spacecraft, this mass savings of this magnitude can have profound effect on vehicle performance. A conceptual design of a spherical BHL cryotank for the NASA Morpheus Lander shows an 80% reduction in mass from the existing aluminum cryotanks. Replacing all four metal tanks on Morpheus with BHL cryotanks would provide the lander with more than 15% additional ΔV. In the Phase II effort, GTL will develop a spherical BHL cryotank suitable for use on the Morpheus lander. This will include fabrication and testing of a full scale (48? diameter) developmental unit, followed by the fabrication and delivery of a prototype spherical BHL cryotank. This effort will also demonstrate the capability to integrate propellant management devices into the spherical BHL cryotank.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Gloyer-Taylor Laboratories LLC	Lead Organization	Industry	Tullahoma, Tennessee
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Light Weight Spherical Cryotank, Phase II

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Completed Technology Project (2016 - 2018)

Primary U.S. Work Locations	
Tennessee	Texas

Project Transitions

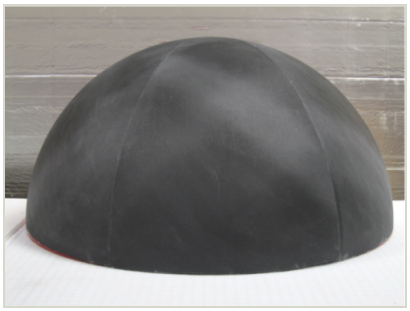
April 2016: Project Start

July 2018: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139838)*

Images



Briefing Chart Image
Light Weight Spherical Cryotank, Phase II
(https://techport.nasa.gov/image/136758)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Gloyer-Taylor Laboratories LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

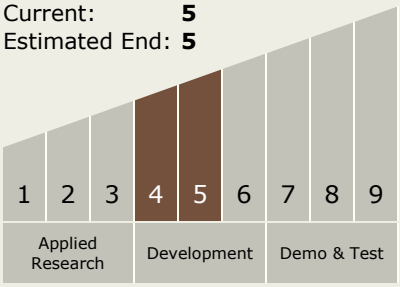
Carlos Torrez

Principal Investigator:

Zachary Taylor

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



Light Weight Spherical Cryotank, Phase II

Completed Technology Project (2016 - 2018)

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.2 Electric Space Propulsion
    - TX01.2.1 Integrated Systems and Ancillary Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System